420-KEF – Travail pratique #1 – 25% de la note finale – par équipe de deux – remise le 11 avril

Compétences

- Observer/modifier les composants d'un projet ASP.Net MVC
- Comprendre l'architecture MVC
- Exploitation d'une base de données Ms SQL
- Utilisation d'entity Framework en tant que DAL
- Utilisation de Linq pour gérer les résultats de requête à la BD
- Créer/Modifier des modèles
- Créer/Modifier des contrôleurs
- Exploitation des objets serveur (HttpContext, Session, etc.)
- Ajouter/modifier des actions à un contrôleur
- Produire et modifier des formulaires Web CRUD de vue
- Assurer la validation des données saisies dans un formulaire Web
- Comprendre et modifier la page maîtresse des pages Web

Énoncé

Vous devez bâtir un site transactionnel de gestion de favoris (bookmark) avec authentification.

Démo du projet à construire : http://www.informatique.clg.qc.ca/Bookmarks/

Pages à construire

Usager anonyme :

- Créer un compte
- Connection

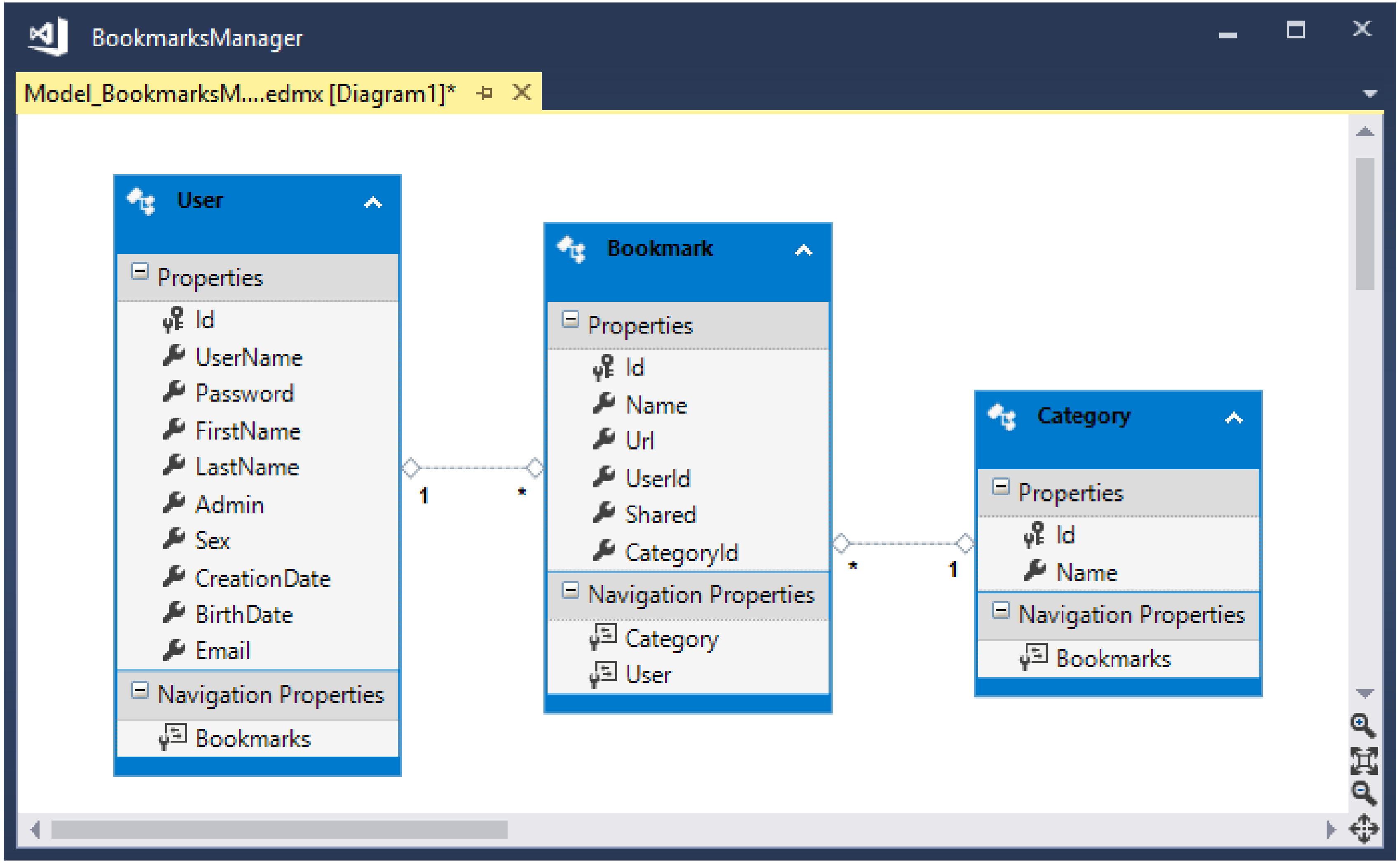
Usager connecté :

- Liste triée/filtrée des favoris
- Ajout de favoris
- Modification / retrait de favoris propriétaires
- Déconnection

Admin connecté :

- Liste triée/filtrée des favoris
- Ajout de favoris
- Modification / retrait de tous les favoris
- Voir la liste des usagers en ligne
- Retrait d'usager et de leurs favoris
- Gestion CRUD des catégories
- Déconnection

Base de données (schéma)



User
- Properties
  - Id
  - UserName
  - Password
  - FirstName
  - LastName
  - Admin
  - Sex
  - CreationDate
  - BirthDate
  - Email
- Navigation Properties
  - Bookmarks

Bookmark
- Properties
  - Id
  - Name
  - Url
  - UserId
  - Shared
  - CategoryId
- Navigation Properties
  - Category
  - User

Category
- Properties
  - Id
  - Name
- Navigation Properties
  - Bookmarks

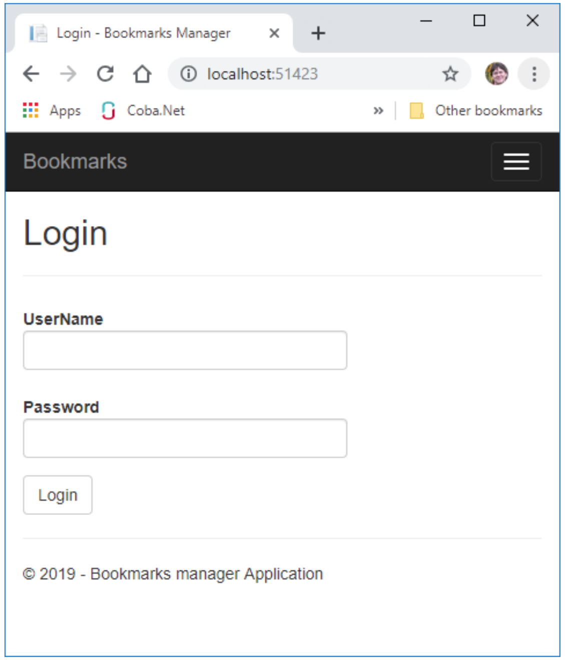
Base de données (Définitions des tables)

```
CREATE TABLE [dbo].[Users] (
    [Id]           INT            IDENTITY (1, 1) NOT NULL,
    [UserName]     NVARCHAR (MAX) NOT NULL,
    [Password]     NVARCHAR (MAX) NOT NULL,
    [FirstName]    NVARCHAR (MAX) NOT NULL,
    [LastName]     NVARCHAR (MAX) NOT NULL,
    [Admin]        BIT            NOT NULL,
    [Sex]          INT            NOT NULL,
    [CreationDate] DATETIME       NOT NULL,
    [BirthDate]    DATETIME       NOT NULL,
    [Email]        NVARCHAR (MAX) NOT NULL,
    CONSTRAINT [PK_dbo.Users] PRIMARY KEY CLUSTERED ([Id] ASC)
);

CREATE TABLE [dbo].[Bookmarks] (
    [Id]         INT            IDENTITY (1, 1) NOT NULL,
    [Name]       NVARCHAR (MAX) NOT NULL,
    [Url]        NVARCHAR (MAX) NOT NULL,
    [UserId]     INT            NOT NULL,
    [Shared]     BIT            NOT NULL,
    [CategoryId] INT            NULL,
    FOREIGN KEY ([UserId]) REFERENCES [dbo].[Users] ([Id]),
    FOREIGN KEY ([CategoryId]) REFERENCES [dbo].[Categories] ([Id]),
    CONSTRAINT [PK_dbo.Bookmarks] PRIMARY KEY CLUSTERED ([Id] ASC)
);

CREATE TABLE [dbo].[Categories] (
    [Id]   INT            IDENTITY (1, 1) NOT NULL,
    [Name] NVARCHAR (MAX) NOT NULL,
    CONSTRAINT [PK_dbo.Categories] PRIMARY KEY CLUSTERED ([Id] ASC)
);
```

Users/Login



Login

UserName

Password

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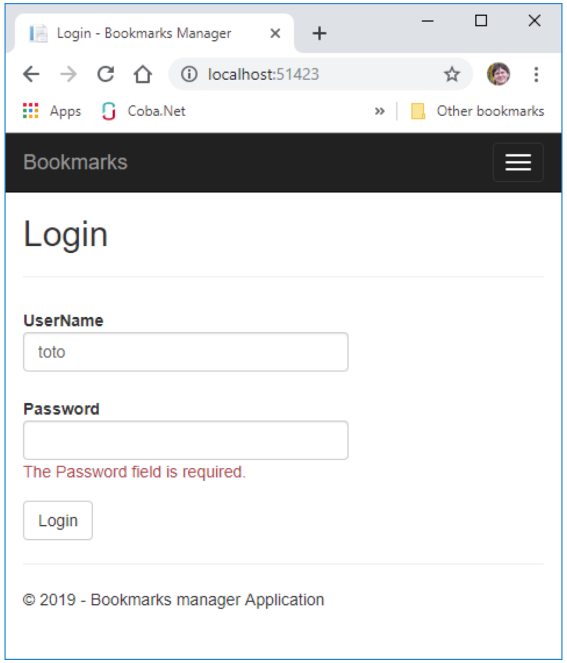

Login

UserName: toto

Password

The Password field is required.

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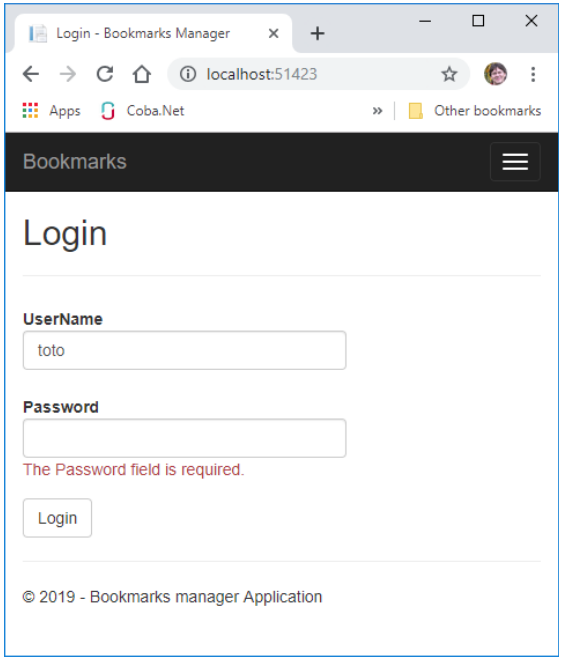

Login

UserName: toto

Password

The Password field is required.

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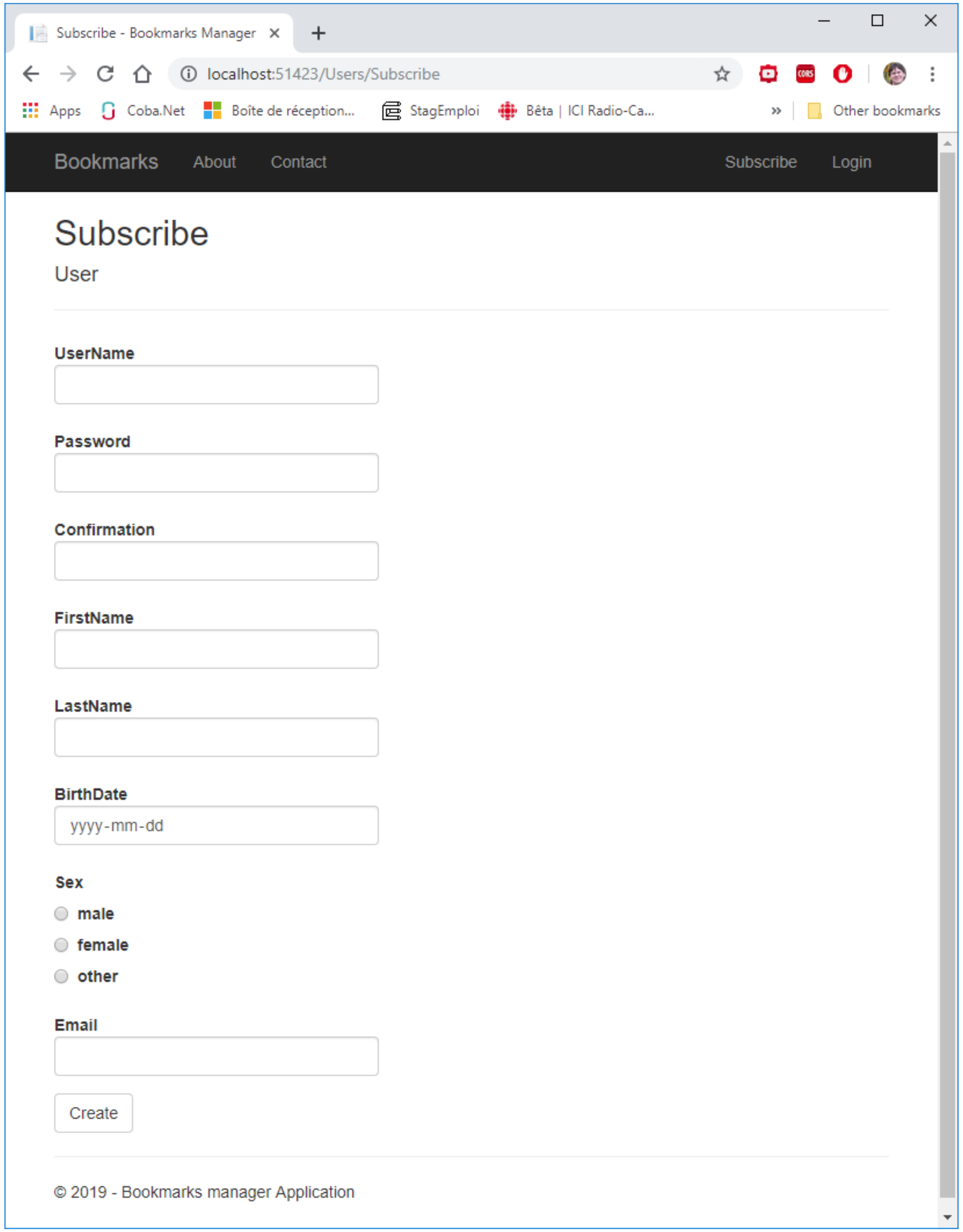
Users/Subscribe



Subscribe

User

UserName

Password

Confirmation

FirstName

LastName

BirthDate

yyyy-mm-dd

Sex

○ male

○ female

○ other

Email

Create

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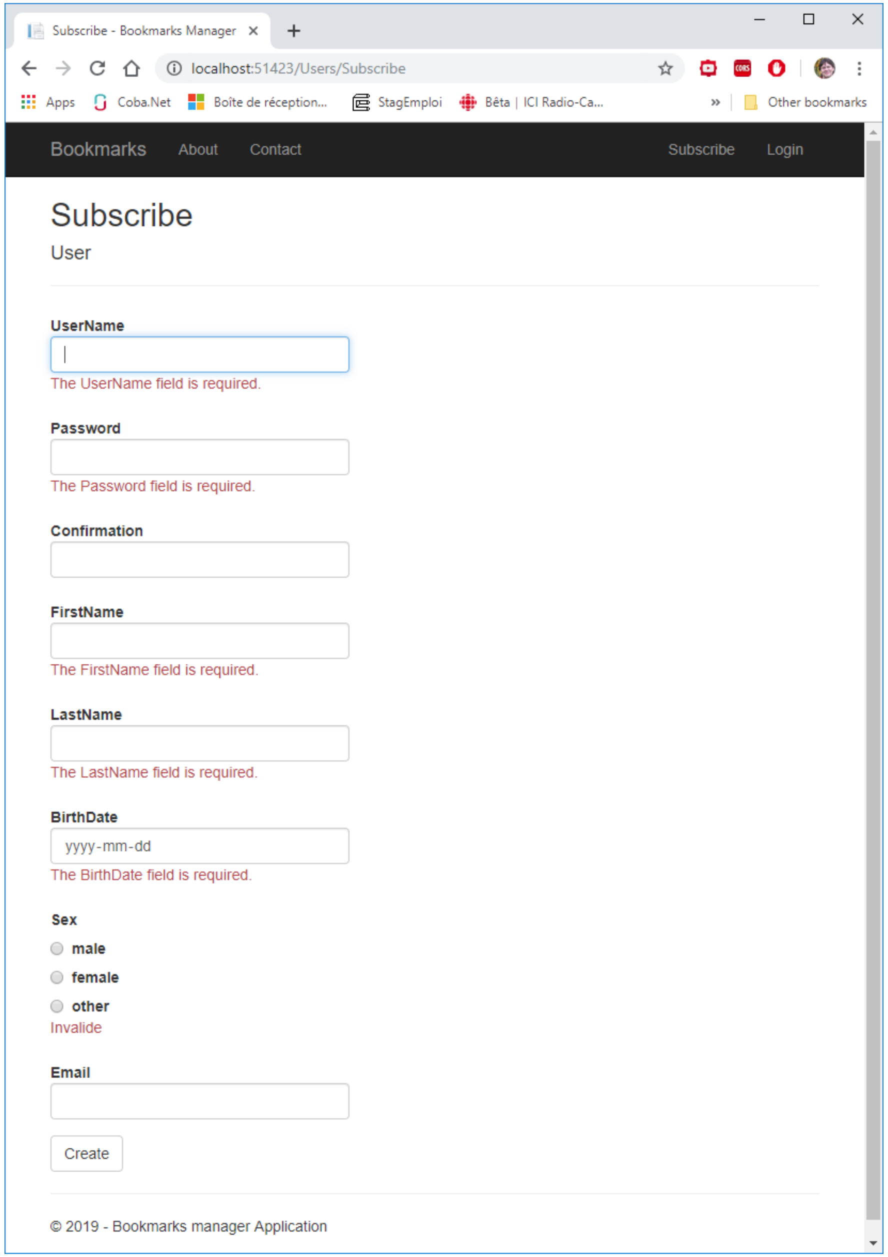

Subscribe

User

UserName

The UserName field is required.

Password

The Password field is required.

Confirmation

FirstName

The FirstName field is required.

LastName

The LastName field is required.

BirthDate

yyyy-mm-dd

The BirthDate field is required.

Sex

○ male

○ female

○ other

Invalide

Email

Create

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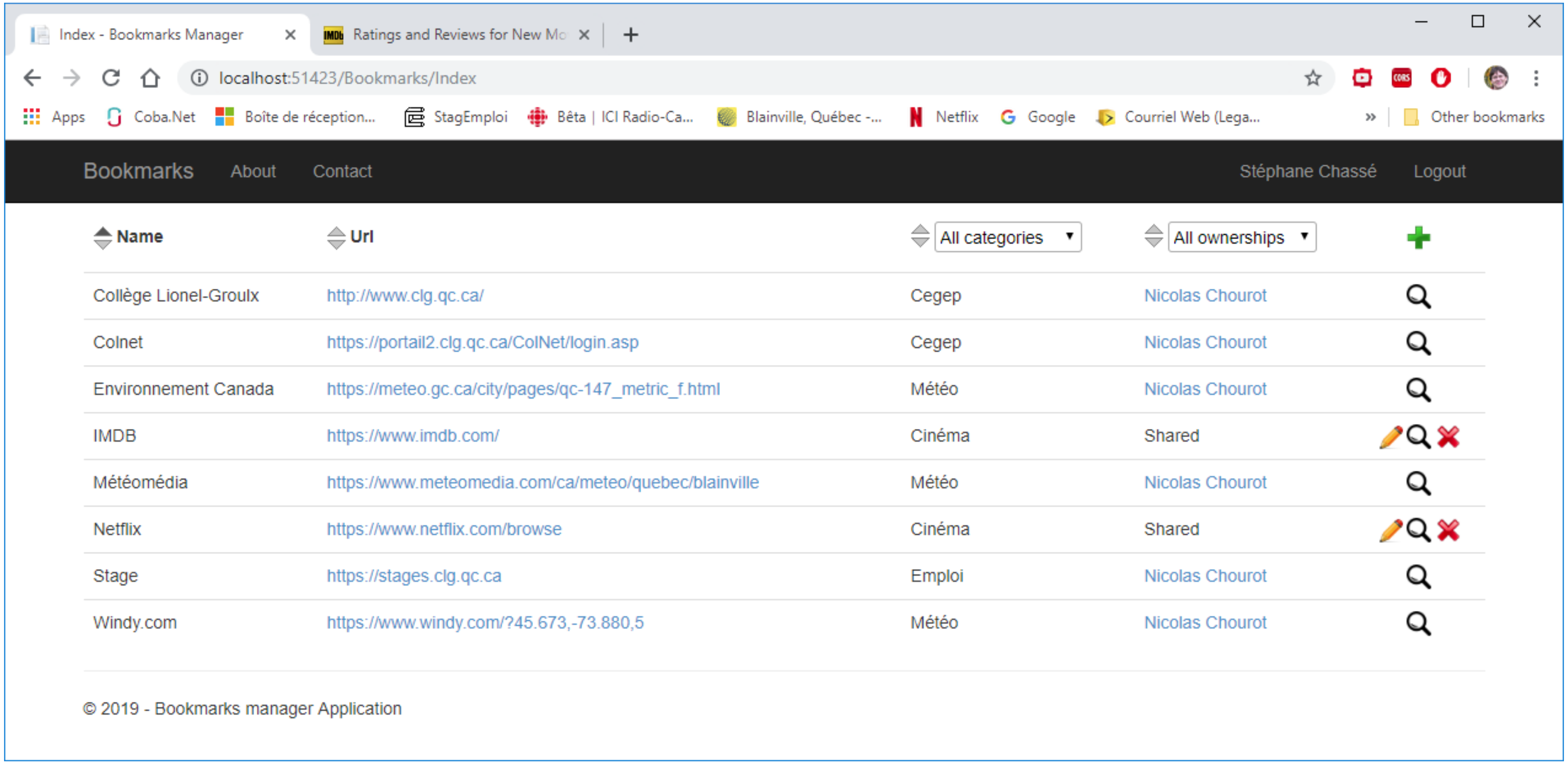
Bookmarks/Index



Name	Url	All categories ▾	All ownerships ▾	✚
Collège Lionel-Groulx	http://www.clg.qc.ca/	Cegep	Nicolas Chourot	🔍
Colnet	https://portail2.clg.qc.ca/ColNet/login.asp	Cegep	Nicolas Chourot	🔍
Environnement Canada	https://meteo.gc.ca/city/pages/qc-147_metric_f.html	Météo	Nicolas Chourot	🔍
IMDB	https://www.imdb.com/	Cinéma	Shared	✎ 🔍 ✖
Météomédia	https://www.meteomedia.com/ca/meteo/quebec/blainville	Météo	Nicolas Chourot	🔍
Netflix	https://www.netflix.com/browse	Cinéma	Shared	✎ 🔍 ✖
Stage	https://stages.clg.qc.ca	Emploi	Nicolas Chourot	🔍
Windy.com	https://www.windy.com/?45.673,-73.880,5	Météo	Nicolas Chourot	🔍

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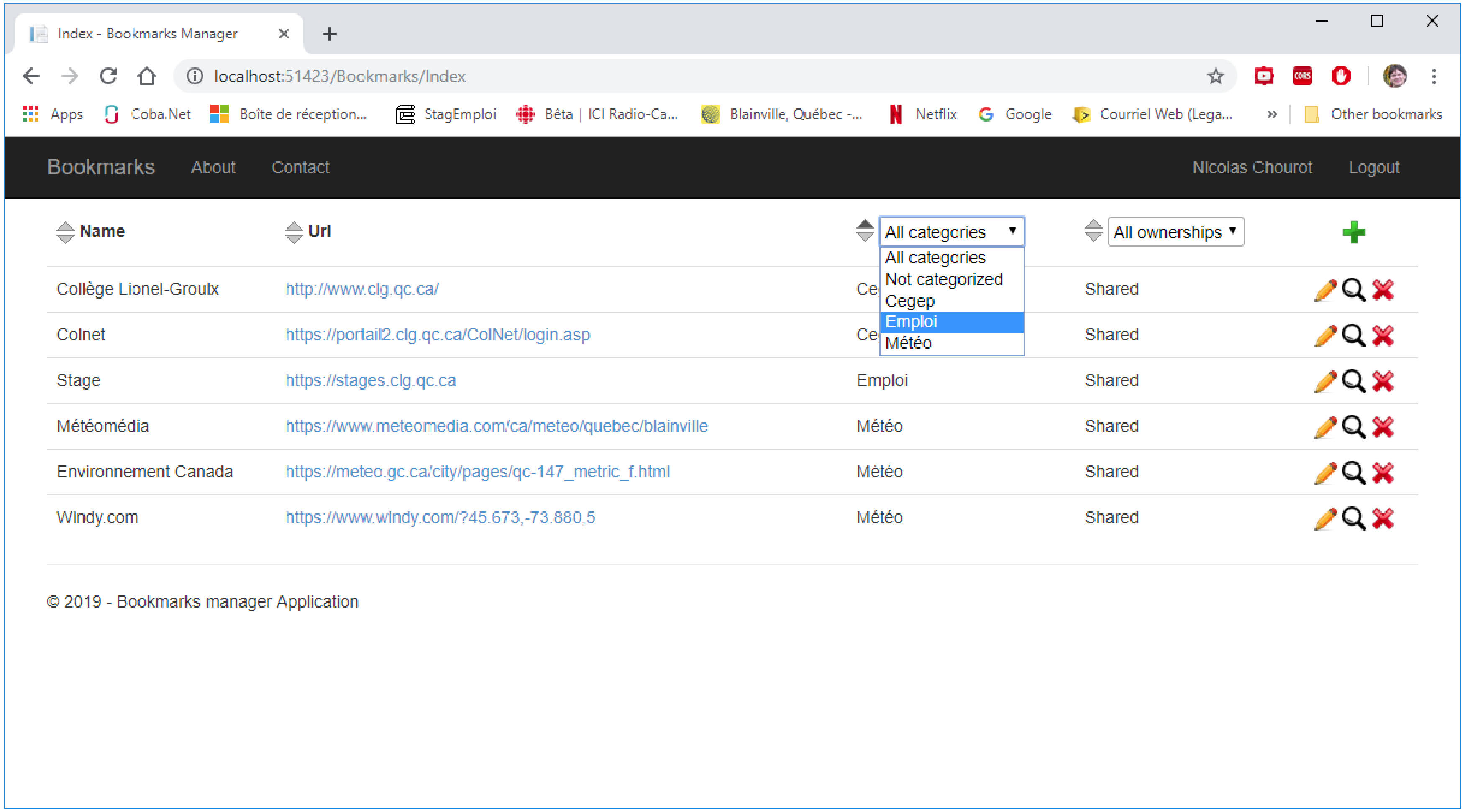
Bookmarks/Index (filtre par catégorie)



Name	Url	All categories	All ownerships	
Collège Lionel-Groulx	http://www.clg.qc.ca/	Ce	Shared	
Colnet	https://portail2.clg.qc.ca/ColNet/login.asp	Ce	Shared	
Stage	https://stages.clg.qc.ca	Emploi	Shared	
Météomédia	https://www.meteomedia.com/ca/meteo/quebec/blainville	Météo	Shared	
Environnement Canada	https://meteo.gc.ca/city/pages/qc-147_metric_f.html	Météo	Shared	
Windy.com	https://www.windy.com/?45.673,-73.880,5	Météo	Shared	

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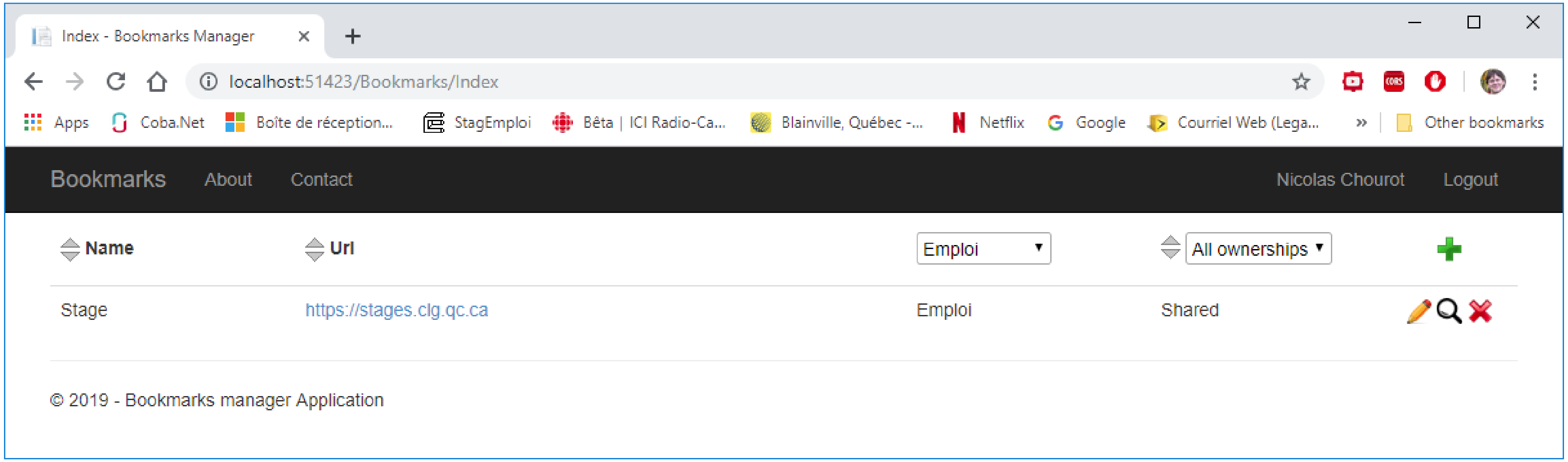

Name	Url	Emploi ▾	All ownerships ▾	✚
Stage	https://stages.clg.qc.ca	Emploi	Shared	✎ 🔍 ✖

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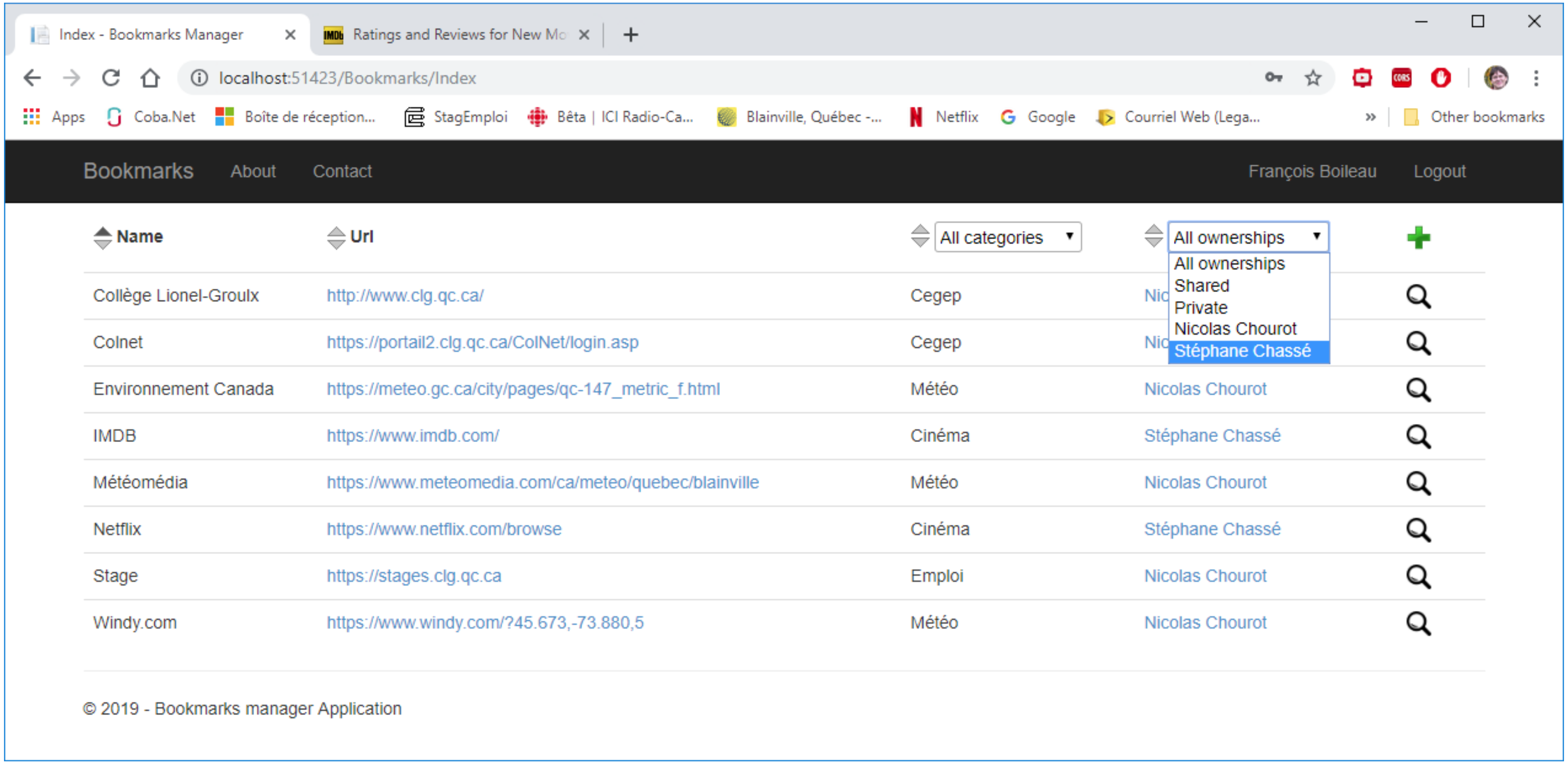
Bookmarks/Index (filtre par propriétaires)



Name	Url	All categories	All ownerships	✚
Collège Lionel-Groulx	http://www.clg.qc.ca/	Cegep	Nic	🔍
Colnet	https://portail2.clg.qc.ca/ColNet/login.asp	Cegep	Nic	🔍
Environnement Canada	https://meteo.gc.ca/city/pages/qc-147_metric_f.html	Météo	Nicolas Chourot	🔍
IMDB	https://www.imdb.com/	Cinéma	Stéphane Chassé	🔍
Météomédia	https://www.meteomedia.com/ca/meteo/quebec/blainville	Météo	Nicolas Chourot	🔍
Netflix	https://www.netflix.com/browse	Cinéma	Stéphane Chassé	🔍
Stage	https://stages.clg.qc.ca	Emploi	Nicolas Chourot	🔍
Windy.com	https://www.windy.com/?45.673,-73.880,5	Météo	Nicolas Chourot	🔍

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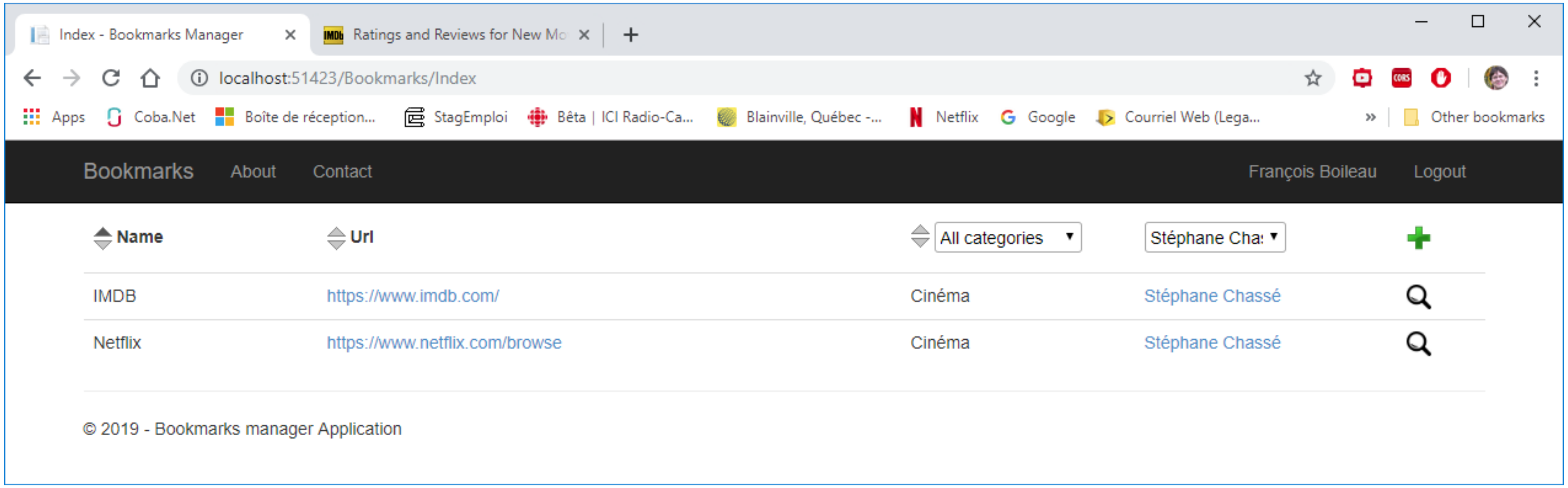

Name	Url	All categories ▾	Stéphane Cha: ▾	✚
IMDB	https://www.imdb.com/	Cinéma	Stéphane Chassé	🔍
Netflix	https://www.netflix.com/browse	Cinéma	Stéphane Chassé	🔍

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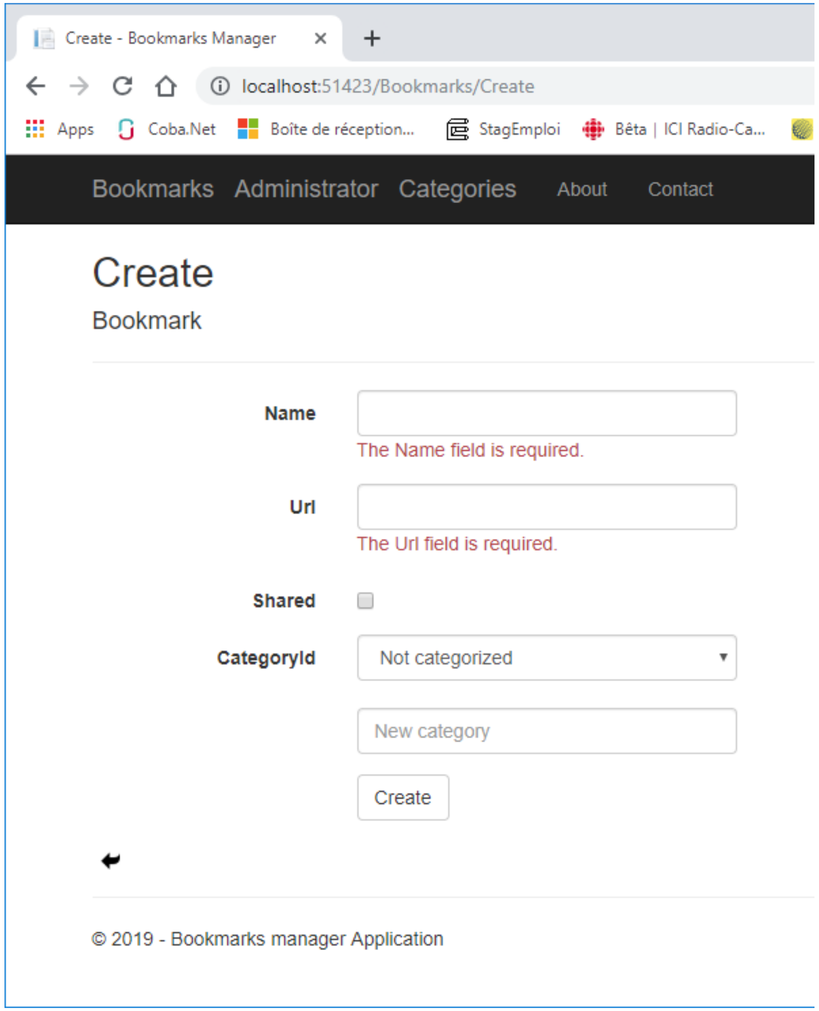
Bookmarks/Create



Create

Bookmark

Name:

The Name field is required.

Url:

The Url field is required.

Shared: □

CategoryId: Not categorized

New category

Create

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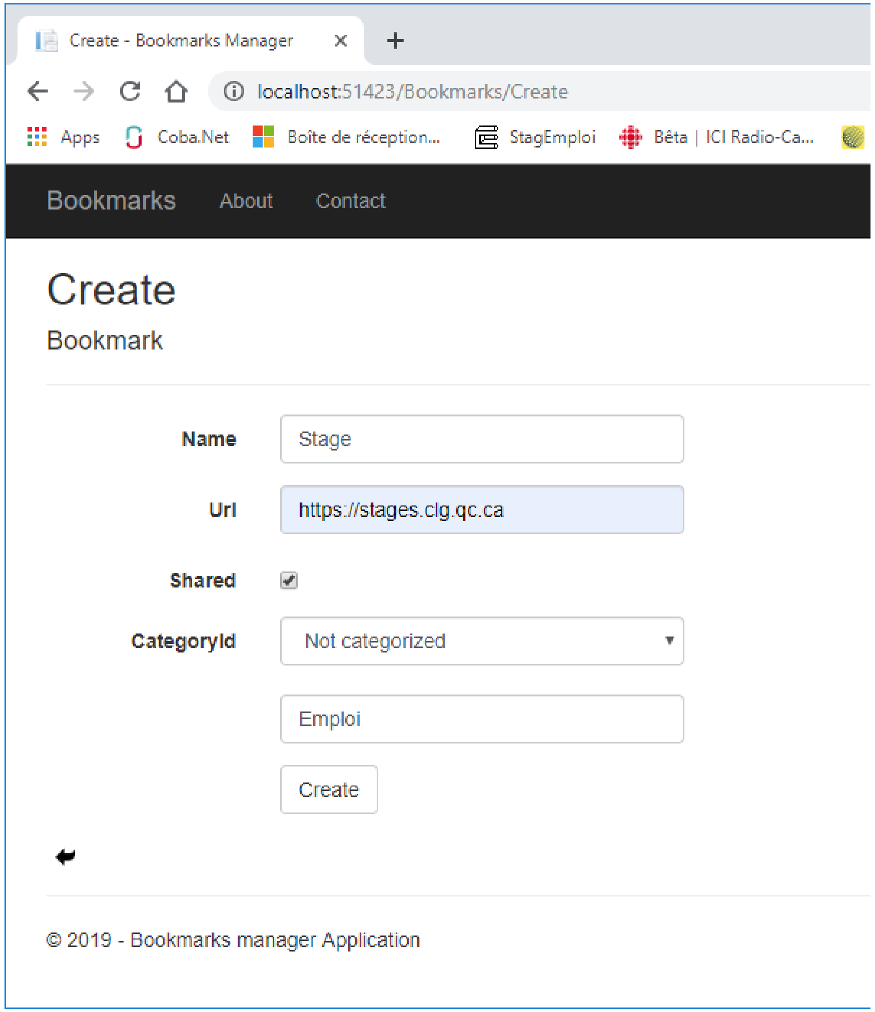

Create

Bookmark

Name: Stage

Url: https://stages.clg.qc.ca

Shared: ☑

CategoryId: Not categorized

Emploi

Create

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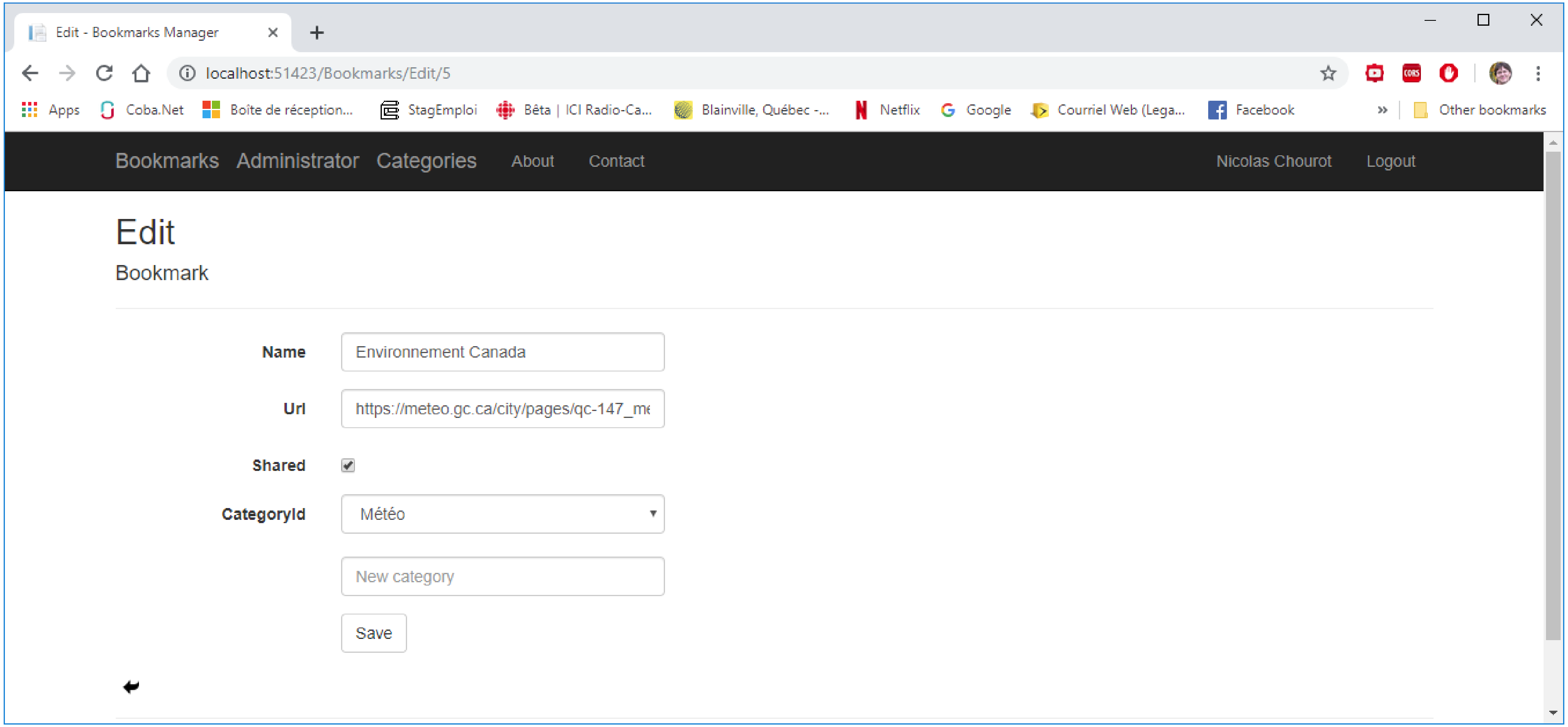
Bookmarks/Edit

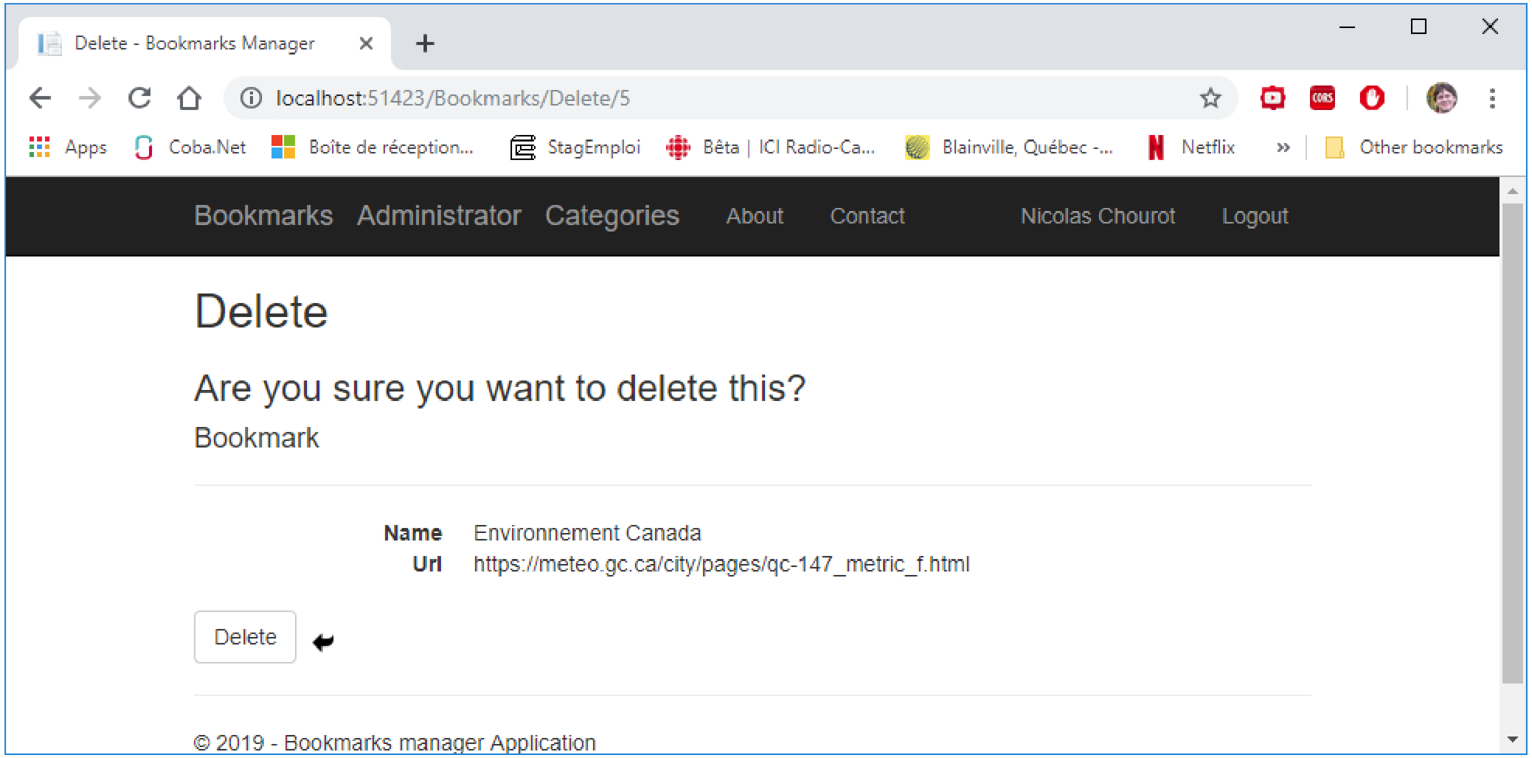


Edit

Bookmark

Name	Environnement Canada
Url	https://meteo.gc.ca/city/pages/qc-147_me
Shared	☑
CategoryId	Météo
	New category

Bookmarks/Delete/id (bookmarkId)



Delete

Are you sure you want to delete this?

Bookmark

Name	Environnement Canada
Url	https://meteo.gc.ca/city/pages/qc-147_metric_f.html

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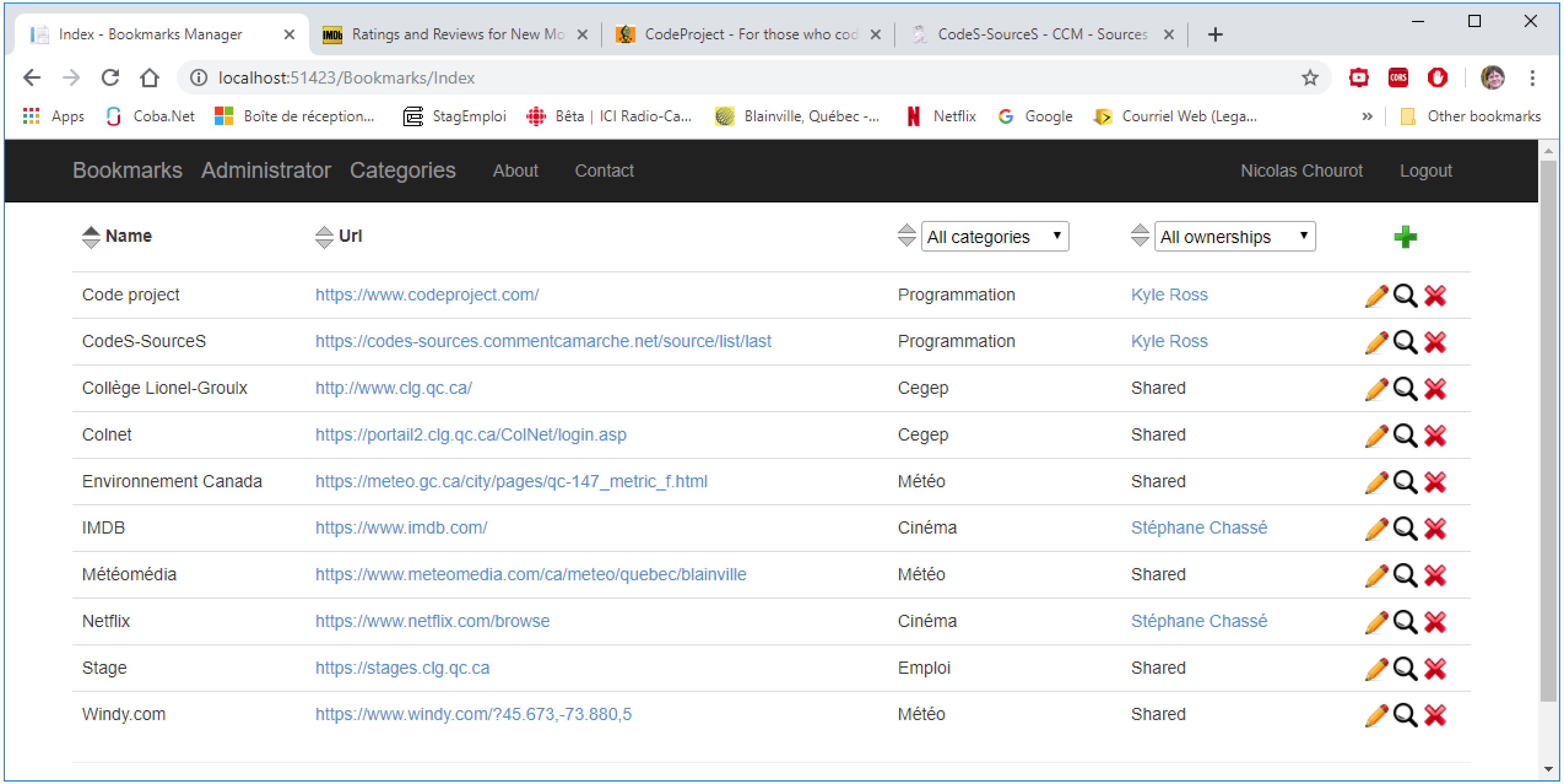
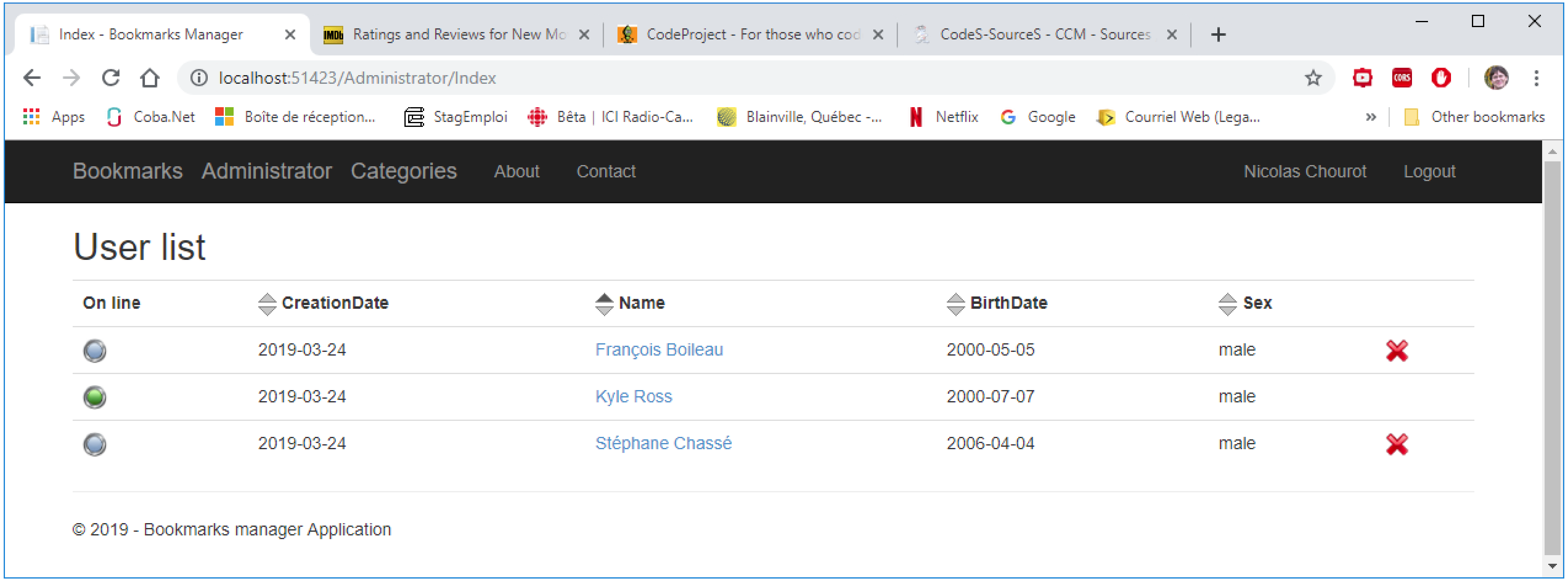
Bookmarks/Index (rôle « admin »)



Name	Url	All categories ▾	All ownerships ▾	✚
Code project	https://www.codeproject.com/	Programmation	Kyle Ross	✎ 🔍 ✖
CodeS-SourceS	https://codes-sources.commentcamarche.net/source/list/last	Programmation	Kyle Ross	✎ 🔍 ✖
Collège Lionel-Groulx	http://www.clg.qc.ca/	Cegep	Shared	✎ 🔍 ✖
Colnet	https://portail2.clg.qc.ca/ColNet/login.asp	Cegep	Shared	✎ 🔍 ✖
Environnement Canada	https://meteo.gc.ca/city/pages/qc-147_metric_f.html	Météo	Shared	✎ 🔍 ✖
IMDB	https://www.imdb.com/	Cinéma	Stéphane Chassé	✎ 🔍 ✖
Météomédia	https://www.meteomedia.com/ca/meteo/quebec/blainville	Météo	Shared	✎ 🔍 ✖
Netflix	https://www.netflix.com/browse	Cinéma	Stéphane Chassé	✎ 🔍 ✖
Stage	https://stages.clg.qc.ca	Emploi	Shared	✎ 🔍 ✖
Windy.com	https://www.windy.com/?45.673,-73.880,5	Météo	Shared	✎ 🔍 ✖

Administrator/Index (rôle « admin »)



User list

On line	CreationDate	Name	BirthDate	Sex	
○	2019-03-24	François Boileau	2000-05-05	male	❌
●	2019-03-24	Kyle Ross	2000-07-07	male	
○	2019-03-24	Stéphane Chassé	2006-04-04	male	❌

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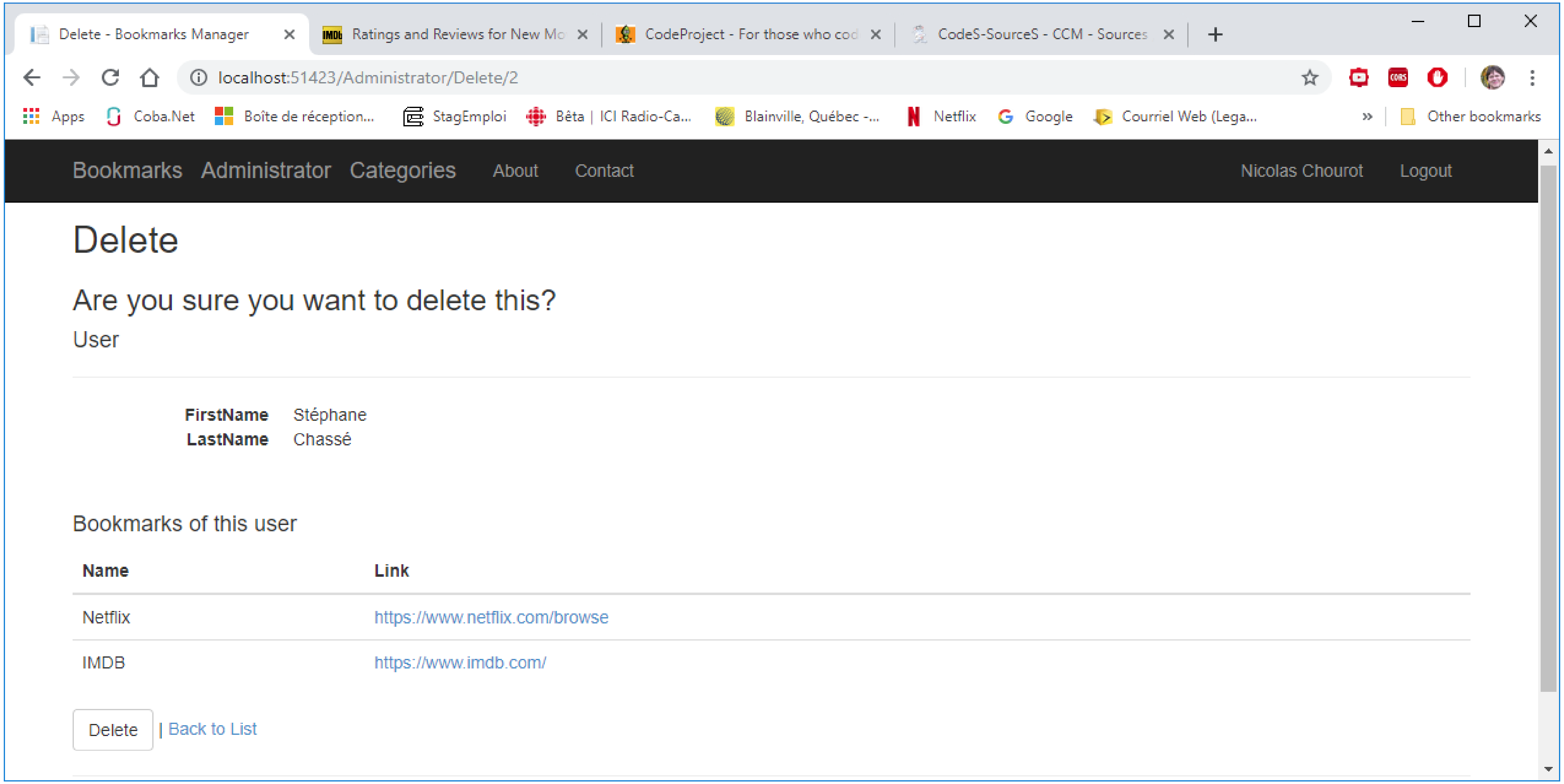
Administrator/Delete/id (userId) (rôle « admin »)



Delete

Are you sure you want to delete this?

User

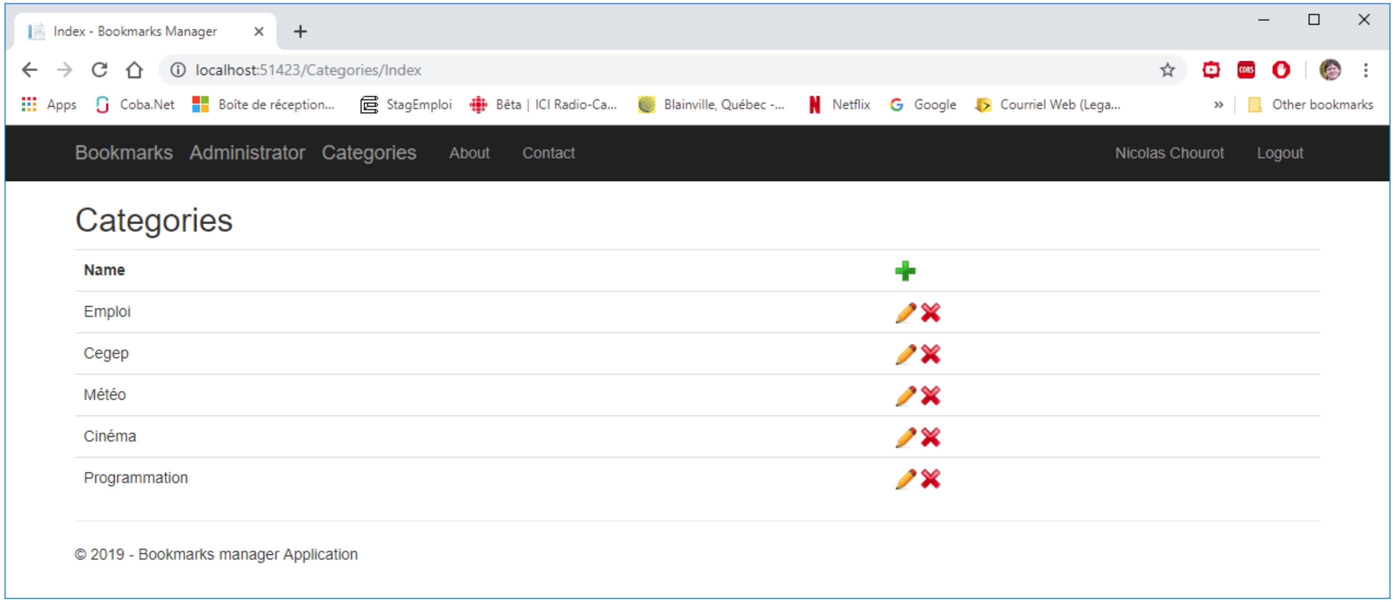
FirstName	Stéphane
LastName	Chassé

Bookmarks of this user

Name	Link
Netflix	https://www.netflix.com/browse
IMDB	https://www.imdb.com/

Delete | Back to List

Categories/index (rôle « admin »)



Categories

Name	✚
Emploi	✎ ✖
Cegep	✎ ✖
Météo	✎ ✖
Cinéma	✎ ✖
Programmation	✎ ✖

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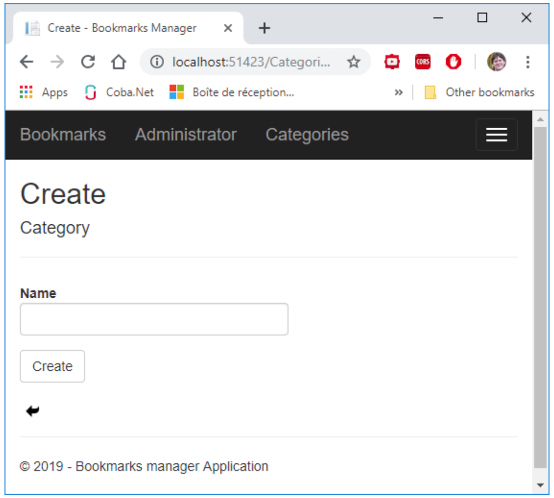

Create

Category

Name

Create

↩

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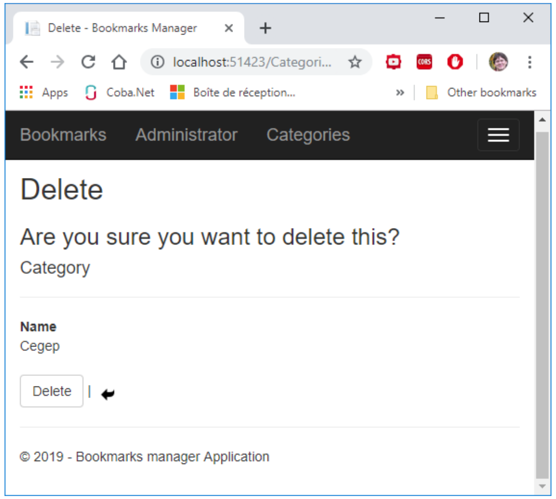

Delete

Are you sure you want to delete this?

Category

Name

Cegep

Delete | ↩

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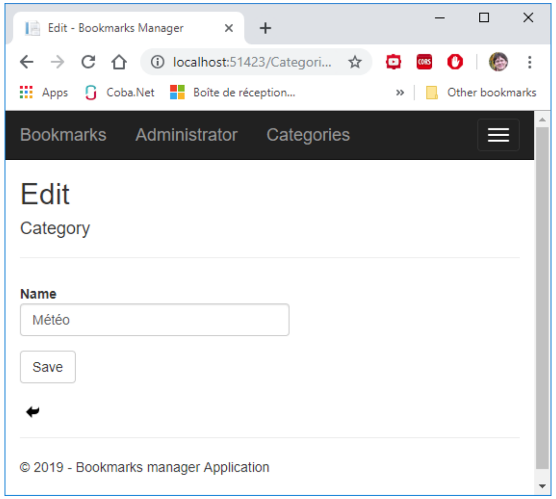

Edit

Category

Name

Météo

Save

↩

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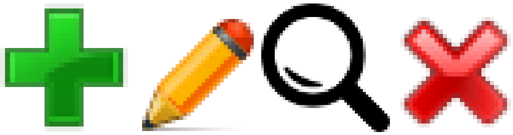
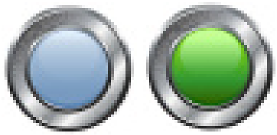
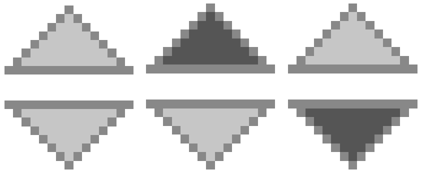
Images utiles pour l’interface (fournies)







Annexe 1 - Actions du contrôleur *Bookmarks* exploitant de Session pour mémoriser les paramètres de tri et filtres des bookmarks

(Code à inclure dans BookmarksController)

```
#region Sort and filters
private void InitSessionSortAndFilter()
{
    if (Session["BookmarkSortBy"] == null)
    {
        Session["BookmarkSortBy"] = "Name";
        Session["BookmarkSortAscendant"] = true;
    }

    if (Session["BookmarkFilterByOwnership"] == null)
    {
        Session["BookmarkFilterByOwnership"] = "";
    }

    if (Session["BookmarkFilterByCategory"] == null)
    {
        Session["BookmarkFilterByCategory"] = "All";
    }
}

public ActionResult Sort(string by)
{
    if (by == (string)Session["BookmarkSortBy"])
        Session["BookmarkSortAscendant"] = !(bool)Session["BookmarkSortAscendant"];
    else
        Session["BookmarkSortAscendant"] = true;

    Session["BookmarkSortBy"] = by;
    return RedirectToAction("Index");
}

public ActionResult FilterOwnership(string Ownership)
{
    Session["BookmarkFilterByOwnership"] = (Ownership == "All" ? "" : Ownership);
    return RedirectToAction("Index");
}

public ActionResult FilterCategory(string Category)
{
    Session["BookmarkFilterByCategory"] = Category;
    return RedirectToAction("Index");
}
#endregion
```

Annexe 2 - Extensions suggérées pour les opérations CRUD sur les tables

```
(Code à inclure dans la définition de la classe suivante)
    public class BookmarksDBEntities : DbContext
    {
        ...
        public DbSet<User> Users { get; set; }
        public DbSet<Bookmark> Bookmarks { get; set; }
        public DbSet<Category> Categories { get; set; }

    }


    //////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
    // Extensions for CRUD queries
    public static class BookmarksDBEntities_DAL
    {
```

```
///////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// Users CRUD queries

public static User Add(this BookmarksDBEntities DB, User user)
{
    if (user != null)
    {
        User new_User = DB.Users.Add(user);
        DB.SaveChanges();
        return new_User;
    }
    return null;
}

public static User Update(this BookmarksDBEntities DB, User user)
{
    if (user != null)
    {
        User userToUpdate = DB.Users.Find(user.Id);
        if (userToUpdate != null)
        {
            userToUpdate.Update(user);
            DB.Entry(userToUpdate).State = System.Data.Entity.EntityState.Modified;
            DB.SaveChanges();
            return DB.Users.Find(userToUpdate.Id);
        }
    }
    return null;
}

public static void Delete(this BookmarksDBEntities DB, User user)
{
    if (user != null)
    {
        User userToDelete = DB.Users.Find(user.Id);
        if (userToDelete != null)
        {
            foreach (Bookmark bookmark in DB.Bookmarks.Where(b => b.UserId == user.Id))
            {
                DB.Entry(bookmark).State = System.Data.Entity.EntityState.Deleted;
            }
            DB.Entry(userToDelete).State = System.Data.Entity.EntityState.Deleted;
            DB.SaveChanges();
        }
    }
}
```

```
public static User FindByUserName(this BookmarksDBEntities DB, string userName)
{
    return DB.Users.Where(u => u.UserName == userName).FirstOrDefault();
}

public static List<User> SortedUsers(this BookmarksDBEntities DB, string sortBy, bool ascendant)
{
    List<User> users = DB.Users.ToList();
    if (users.Count > 1)
    {
        switch (sortBy)
        {
            case "Name":
                if (ascendant)
                    users = users.OrderBy(b => b.FirstName).ThenBy(b => b.LastName).ToList();
                else
                    users = users.OrderByDescending(b => b.FirstName).ThenByDescending(b => b.LastName).ToList();
                break;
            case "CreationDate":
                if (ascendant)
                    users = users.OrderBy(b => b.CreationDate).ToList();
                else
                    users = users.OrderByDescending(b => b.CreationDate).ToList();
                break;
            case "BirthDate":
                if (ascendant)
                    users = users.OrderBy(b => b.BirthDate).ToList();
                else
                    users = users.OrderByDescending(b => b.BirthDate).ToList();
                break;
            case "Sex":
                if (ascendant)
                    users = users.OrderBy(b => b.Sex).ToList();
                else
                    users = users.OrderByDescending(b => b.Sex).ToList();
                break;
        }
    }
    return users;
}
```

```
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// Bookmarks CRUD queries

public static Bookmark Add(this BookmarksDBEntities DB, Bookmark bookmark)
{
    if (bookmark != null)
    {
        Bookmark new_Bookmark = DB.Bookmarks.Add(bookmark);
        DB.SaveChanges();
        return new_Bookmark;
    }
    return null;
}

public static Bookmark Update(this BookmarksDBEntities DB, Bookmark bookmark)
{
    if (bookmark != null)
    {
        Bookmark bookmarkToUpdate = DB.Bookmarks.Find(bookmark.Id);
        if (bookmarkToUpdate != null)
        {
            bookmarkToUpdate.Update(bookmark);
            DB.Entry(bookmarkToUpdate).State = System.Data.Entity.EntityState.Modified;
            DB.SaveChanges();
            return DB.Bookmarks.Find(bookmarkToUpdate.Id);
        }
    }
    return null;
}

public static void Delete(this BookmarksDBEntities DB, Bookmark bookmark)
{
    if (bookmark != null)
    {
        Bookmark bookmarkToDelete = DB.Bookmarks.Find(bookmark.Id);
        if (bookmarkToDelete != null)
        {
            DB.Entry(bookmark).State = System.Data.Entity.EntityState.Deleted;
            DB.SaveChanges();
        }
    }
}
```

```
public static List<BookmarkItemView> BookmarkList(this BookmarksDBEntities DB, User viewer, string SortBy, bool ascendant)
{
    List<BookmarkItemView> bookmarkItems = new List<BookmarkItemView>();
    foreach (Bookmark bookmark in DB.Bookmarks)
    {
        if ((viewer.Admin) || (viewer.Id == bookmark.UserId) || (bookmark.Shared))
        {
            bookmarkItems.Add(new BookmarkItemView(DB, bookmark, viewer));
        }
    }
    switch (SortBy)
    {
        case "Name":
            if (ascendant)
                bookmarkItems = bookmarkItems.OrderBy(b => b.Name).ToList();
            else
                bookmarkItems = bookmarkItems.OrderByDescending(b => b.Name).ToList();
            break;
        case "Url":
            if (ascendant)
                bookmarkItems = bookmarkItems.OrderBy(b => b.Url).ToList();
            else
                bookmarkItems = bookmarkItems.OrderByDescending(b => b.Url).ToList();
            break;
        case "OwnerShip":
            if (ascendant)
                bookmarkItems = bookmarkItems.OrderBy(b => b.OwnerShip).ToList();
            else
                bookmarkItems = bookmarkItems.OrderByDescending(b => b.OwnerShip).ToList();
            break;
        case "Category":
            if (ascendant)
                bookmarkItems = bookmarkItems.OrderBy(b => b.Category).ToList();
            else
                bookmarkItems = bookmarkItems.OrderByDescending(b => b.Category).ToList();
            break;
    }

    return bookmarkItems;
}
```

```
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// Categories CRUD queries

public static Category Add(this BookmarksDBEntities DB, Category category)
{
    if (category != null)
    {
        Category new_Category = DB.Categories.Add(category);
        DB.SaveChanges();
        return new_Category;
    }
    return null;
}
public static Category Update(this BookmarksDBEntities DB, Category category)
{
    if (category != null)
    {
        Category categoryToUpdate = DB.Categories.Find(category.Id);
        if (categoryToUpdate != null)
        {
            categoryToUpdate.Update(category);
            DB.Entry(categoryToUpdate).State = System.Data.Entity.EntityState.Modified;
            DB.SaveChanges();
            return DB.Categories.Find(categoryToUpdate.Id);
        }
    }
    return null;
}
public static void Delete(this BookmarksDBEntities DB, Category category)
{
    if (category != null)
    {
        Category categoryToDelete = DB.Categories.Find(category.Id);
        if (categoryToDelete != null)
        {
            foreach (Bookmark bookmark in DB.Bookmarks.Where(b => b.CategoryId == categoryToDelete.Id))
            {
                bookmark.CategoryId = 0;
                DB.Entry(bookmark).State = System.Data.Entity.EntityState.Modified;
            }
            DB.Entry(categoryToDelete).State = System.Data.Entity.EntityState.Deleted;
            DB.SaveChanges();
        }
    }
}
```

```
    public static bool CategoryExist(this BookmarksDBEntities DB, string name)
    {
        foreach (Category category in DB.Categories)
        {
            if (category.Name == name)
                return true;
        }
        return false;
    }
}
```

Annexe 3 - HTML Helper

RadioButtonsGroupFor (inclure le source CustomHelper.cs dans le répertoire App_Code)

```
<div class="col-md-10">
	@Html.RadioButtonsGroupFor(model => model.Sex, true /*creating*/)
	@Html.ValidationMessageFor(model => model.Sex, "", new { @class = "text-danger" })
</div>
```

Helper.SortAction (inclure le source Helper.cshtml dans le répertoire App_Code)

```
@Helper.SortAction(Url, "Sort", Html.DisplayNameFor(model => model.Name).ToString(), "Bookmark", "Name")
```